Remarks/Argument

By this Amendment, independent claims 9 and 14 have been revised to incorporate the subject matter of dependent claims 12 and 17, respectively. Dependent claims 12 and 17 have thus been cancelled, and claims 1-11 and 13-16 are now pending in the application.

Claims 9-10, 12-15 and 17 were rejected under 35 U.S.C. ¶103 as being unpatentable over the combination of Fulford, Jr. et al., Sheng et al., and Tsai et al. The remaining claims 11 and 16 were rejected under 35 U.S.C. ¶103 as being unpatentable over the combination of Fulford, Jr. et al., Sheng et al., and Tsai et al., and further in view of either Hadjizadeh-Amini or Chang et al. Applicants respectfully traverse these rejections.

In the Office Action, the Examiner states:

> "Sheng et al. discloses formation of oxide buffer layer 24 by either of oxidation or by deposition to prevent contamination (col. 4, lines 60-68). ... It would have been obvious ... to combine the teachings of Fulford, Jr. et al and Sheng et al to enable the disclosed formation of buffer layer 24 of Fulford, Jr. et al to be performed according to the teachings of Sheng et al such that contamination is mitigated."

In response, Applicants acknowledge, as stated by Sheng et al., that an oxide layer can generally be formed by thermal oxidation or by thermal deposition. However, Applicants strongly disagree that one skilled in the art would be motivated to modify the express teachings of Fulford, Jr et al. in the fashion suggested by the Examiner.

First, the Examiner's apparent motivation to modify Fulford, Jr et al. is "that contamination is mitigated" by thermal deposition of the buffer layer 24 of Fulford, Jr. et al. However, Applicants can find no teaching or suggestion in Sheng et al. of this allegation of the Examiner. In other words, it is not understood why the Examiner contends that thermal deposition of the oxide 24 would achieve better mitigation of contamination when compared to the oxidation processes taught by Fulford, Jr. et al.

Second, Fulford, Jr. et al. expressly teach that the gate conductor 12 thereof comprises polycrystalline silicon which reacts with oxygen to form polycrsyalline oxide. Col. 6, lines 17-20.

Third, Fulford, Jr. et al. expressly teach the option of including a barrier species with the oxidizing ambient used during oxidation of the oxide layer 24. Col. 6, line 36, through col. 7, line 4. Note there that Fulford, Jr. et al. expressly teaches two growth processes – one by oxidation only (FIG. 3a) and the other by oxidation simultaneous with nitridation (FIG. 3b). Clearly, when Fulford, Jr. et al. is considered as a whole, the use of oxidation (with or without the introduction of a barrier species) is a key aspect of the disclosed invention.

Finally, it is worthy of note that all claims of Fulford, Jr. et al. are limited to "growing" of the oxide layer 24, thus further evidencing that one skilled in the art would not arbitrarily substitute one oxide formation process for another as apparently suggested by the Examiner.

Fulford, Jr. et al. discuss several features/advantages of thermal oxidation processes utilized to grow the oxide layer 24 thereof (and even go so far as to limit their claimed invention accordingly). On the other hand, Sheng et al. simply teaches that is possible to deposit an oxide layer. Sheng et al. is entirely devoid of any suggestion or motivation to alter the teachings of Fulford, Jr. et al.

The Examiner further contends that recited thickness (30Å or more) would have been obvious through "routine experimentation." Applicants respectfully disagree. Fulford, Jr. et al. is silent as to a quantified thickness range of the oxide layer 24 thereof,

and instead rather vaguely teaches that the oxidation process is "carried out for sufficient duration" to achieve a sufficient dielectric thickness to minimize ingress of contaminants and to minimize channeling of implants. Col. 6, lines 28-35. No thickness dimension are taught or suggested. In contrast, the present inventors have discovered that depositing the oxide buffer layer to at least 30Å is effective in preventing implanting damage and protecting the substrate from several photoresist ashing processes.

For at least the reasons stated above, Applicants respectfully contend that claims 9-10, 12-15 and 17 would not have been obvious to one or ordinary skill in view of the cited references, taken individually or in combination.

No other issues remaining, reconsideration and favorable action upon the claims now-pending in the application are requested.

Respectfully submitted,

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